

III. Remarks

A. Status of Application

Claims 1, 4, 5, 8-14 and 16-20 were previously pending.

Claims 1, 4, 5, 8-14 and 16-20 stand rejected, as set forth in the Office Action mailed April 1, 2010, and maintained in the Advisory Action mailed June 16, 2010.

Claim 12 has been canceled without prejudice or disclaimer.

Claims 1 and 14 have been amended.

Claims 4, 5, 8-11, 13 and 16-20 have been maintained in their previously-presented form.

As a result, claims 1, 4, 5, 8-11, 13, 14 and 16-20 are pending.

Favorable consideration of claims 1, 4, 5, 8-11, 13, 14 and 16-20 is respectfully requested.

B. Support for Amendments to Claims 1 and 14

As noted above, claims 1 and 14 have been amended. More particularly, claims 1 and 14 have been amended by specifying that the carrier(s) are non magnetic. This amendment is supported by paragraphs [0008] and [0009] on page 3 of the specification, which provide:

"When using this device, since the magnetic particles can pass through the liquid passage, it is necessary to apply the magnetic field to attach the magnetic particles onto the inner wall so as to hold the magnetic particles in the pipette tip. Therefore, in order to perform the processes, it is necessary to complicatedly combine the drawing/discharging control, the attraction control by the magnetic field, and the transfer control of the pipette tip. Moreover in the case where the carrier is a non magnetic carrier, there is a problem in that the separation can not be performed by the apparatus. Therefore, it is a first object of the present invention to provide a carrier housing/processing apparatus and a method wherein, regarding a carrier which is fixed or able to be fixed with various substances, by enabling processes to be performed while accommodating and holding in the carrier housing section, the attraction control for accommodating and holding the carrier in the housing section and the drawing control, are made unnecessary, so that the complicated reaction processes are simplified, and the processes can be easily performed with a small scale apparatus structure."

(emphases added).

C. Rejections Under 35 U.S.C. §103

1. Claims 1, 4, 5, 8, 9, 12-14 and 16-20

Claims 1, 4, 5, 8, 9, 12-14 and 16-20 stand rejected under 35 U.S.C. §103(a) over U.S. Patent No. 5,895,631 to Tajima ("Tajima '631"). As noted above, claim 12 has been canceled. Insofar as it may be applied against the present claims, this rejection is respectfully traversed.

Amended claim 1 recites the following:

A carrier housing/processing apparatus comprising:
one or a plurality of non magnetic carriers fixed or able to be fixed with chemical substances such as ligands;
a transferable carrier housing section comprising:
a large diameter section which accommodates said carrier, and
a small diameter section connected to the large diameter section, the small diameter section comprising a tip, and a fluid inlet/outlet at the tip;
a plurality of containers provided outside of said transferable carrier housing section;
a drawing/discharging section configured to draw a fluid through said inlet/outlet and into said transferable carrier housing section, and then discharge the fluid out of said transferable carrier housing section through said inlet/outlet; and
a transferring section which transfers said transferable carrier housing section relatively with respect to the containers, the transfer of said transferable carrier housing section relatively with respect to the containers including the transfer of the large diameter section and the small diameter section relatively with respect to the containers, the transfer of the small diameter section relatively with respect to the containers including the transfer of the tip and the inlet/outlet relatively with respect to the containers,

wherein said carrier is formed in a size or a shape not allowing said carrier to pass through said inlet/outlet, and in a state of holding said carrier in said housing section, by self-weight of said carrier, a fluid is drawn and discharged,

wherein said carrier housing section further comprises an opening having a size enabling said carrier to pass through, and said drawing/discharging section is provided with a nozzle which detachably connects with said opening, and said carrier is formed in a size capable of passing through said opening but not capable of passing through said inlet/outlet,

wherein the smaller diameter of the small diameter section of said transferable carrier housing section enables insertion of the smaller diameter section into each of the containers, the insertion of the smaller diameter section into each of the containers including the insertion of the tip and the inlet/outlet into each of the containers, and

wherein said carrier or said carrier housing section is provided with an adhesion prevention section for keeping said carrier from being adhered to the inner wall of said carrier housing section.

Claims 4, 5, 8-11, 13 and 19 depend directly or indirectly from claim 1 and therefore each includes at least the foregoing elements. Amended claim 14 is a method version of amended claim 1 and claims 16-18 and 20 depend directly or indirectly from amended claim 14. Thus each of claims 14, 16-18 and 20 includes at least the foregoing elements of amended claim 1.

As the PTO recognizes in MPEP §2142:

The examiner bears the initial burden of factually supporting any prima facie conclusion of obviousness. If the examiner does not produce a prima facie case, the applicant is under no obligation to submit evidence of nonobviousness.

In the present application, the Examiner has not met the burden of factually supporting a *prima facie* case of obviousness of amended claim 1 under 35 U.S.C. §103(a) for the reasons set forth below.

a. Tajima ‘631 fails to disclose the subject matter of amended claim 1.

MPEP §2143.03 states that “[a]ll words in a claim must be considered in judging the patentability of that claim against the prior art.” *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).” However, in the present matter, the Examiner has not shown that all the words in claim 1 have been considered. In particular, amended claim 1 recites, *inter alia*:

1. *one or a plurality of non magnetic carriers fixed or able to be fixed with chemical substances such as ligands;*
2. *wherein said carrier is formed in a size or a shape not allowing said carrier to pass through said inlet/outlet; and*
3. *an adhesion prevention section for keeping said carrier from being adhered to the inner wall of said carrier housing section.*

(emphasis added).

Here, Tajima ‘631 discloses magnetic particles G, which are drawn with a reaction liquid through the inlet/outlet of a chip (or pipette) T4 during the pumping (sucking and/or discharging) of fluid through the inlet/outlet. The magnetic particles G are separated from the reaction liquid, and held within the chip T4, by adhering the magnetic particles G to the inner wall of the chip T4 using a magnetic body M. (See, e.g., Tajima ‘631, Fig. 13).

Tajima ‘631, however, does not disclose the three elements of claim 1 listed above. Indeed, the Examiner admits that Tajima ‘631 does not disclose the second and third elements of claim 1 listed above. (See, e.g., Office Action mailed April 1, 2010, page 3, lines 17 and 18 (second element) and page 4, lines 4-7 (third element)). Regarding the first element of claim 1 listed above, Tajima ‘631 does not disclose a non magnetic carrier, as required by claim 1. In addition, it would not be obvious to modify the disclosure of Tajima ‘631 to provide a non magnetic carrier because the particles’ magnetic properties are required by Tajima ‘631 in order to separate the magnetic particles from the reaction liquid and hold the magnetic particles within the chip T4. In contrast to Tajima ‘631, by requiring a non magnetic carrier that is sized or shaped so that the carrier cannot pass through the inlet/outlet, amended claim 1 eliminates the need for the magnetic body M and the control thereof, and further eliminates the need to coat the carrier with a non magnetic substance, such as glass or resin, so that via the coating the carrier can directly bond to target biochemical substances. As a result, the apparatus of amended claim 1 is smaller, simpler and less costly to manufacture than the apparatus of Tajima ‘631.

For the foregoing reasons, it is apparent that the rejection of claims 1, 4, 5, 8, 9, 13, 14 and 16-20 is not supported by Tajima ‘631 and should be withdrawn.

- b. The proposed modification to provide a carrier that is sized or shaped so that the carrier cannot pass through the inlet/outlet improperly changes the principle of operation of Tajima '631.**

In addition to the reasons noted above, the rejection of claims 1, 4, 5, 8, 9, 13, 14 and 16-2 under 35 U.S.C. §103(a) over Tajima '631 is improper because the proposed modification to provide a carrier that is sized or shaped so that the carrier cannot pass through the inlet/outlet changes the principle of operation of Tajima '631.

MPEP §2143.01(VI) provides that a proposed modification cannot change the principle of operation of a reference.

The focus of MPEP §2143.01(VI) is the primary reference, as opposed to the subject matter of the claim sought to be rejected. If the examiner-proposed modification of the primary reference changes the principle of operation of the primary reference apparatus, the modification cannot permissibly be made—even if the modification would otherwise meet the limitations of the claim being rejected.

Here, the principle of operation of the Tajima '631 apparatus is separation by affinity chromatography in batch. However, the Examiner's proposed modification changes the designed-for operating principle of the Tajima '631 apparatus from achieving separation by affinity chromatography "in batch" to achieving separation by affinity chromatography "using columns or minicolumns packed with beads, wherein the minicolumns could be pipette tips and wherein beads larger [than] the column outlet are used to keep them inside the column." (Office Action mailed April 1, 2010, page 10, lines 9-13). This change in the designed-for operating principle of the Tajima '631 apparatus is confirmed by the Examiner because the Examiner associates the former operating principle with "Tajima '631" and associates the latter operating principle with the "proposed modification." (See Office Action mailed April 1, 2010, page 10, lines 9-13; *see also id.* at page 14, lines 5-7).

Because of the significant change in operating principle of the Tajima '631 apparatus that would be occasioned by the modification to provide a carrier that is sized or shaped so that the carrier cannot pass through the inlet/outlet, such modification is impermissible under at least MPEP §2143.01(VI). Therefore, the rejection of claims 1, 4, 5, 8, 9, 13, 14 and 16-20 under 35 U.S.C. §103(a) over Tajima '631 is improper and should be withdrawn.

The Examiner cites four (4) references as "evidence that using microtips as microcolumns for affinity chromatography (i.e., the proposed modification) was routine in the prior art." (*See id.* at page 14, lines 1-7; *see also id.* at page 10, lines 13-18). Specifically, the Examiner cites (1) Kussmann-Gerber et al., *Analytical Biochemistry*, 1999, 271: 102-105 ("Kussmann-Gerber"); (2) Posewitz et al., *Anal. Chem.*, 1999, 71: 2883-1892 ("Posewitz"); (3) U.S. Patent No. 7,198,896 to Rush et al. ("Rush '896");

and (4) Gatlin et al., Anal. Biochem., 1998, 263: 93-101 ("Gatlin"). However, as established above the proposed modification changes the principle of operation of the Tajima '631 apparatus and thus is impermissible, regardless of what these references disclose.

c. Tajima '631 leads away from the proposed modification thereof to include an adhesion prevention section for keeping said carrier from being adhered to the inner wall of said carrier housing section.

In addition to the reasons noted above, the rejection of claims 1, 4, 5, 8, 9, 13, 14 and 16-2 under 35 U.S.C. §103(a) over Tajima '631 is improper because Tajima '631 leads away from the proposed modification thereof to include an adhesion prevention section for keeping said carrier from being adhered to the inner wall of said carrier housing section.

As stated in MPEP §2141.02(VI), "[a] prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention." (emphasis in original) (citing *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540 (Fed. Cir. 1983)).

The Examiner's proposed modification of the chip T4 of Tajima '631 to include an adhesion prevention section for keeping the carrier from being adhered to the inner wall of the carrier housing section is improper because Tajima '631, as a whole, leads away from the modification.

Tajima '631 discloses contacting the outside surface of a chip T4 with a magnetic body M to thereby adhere magnetic particles G against the inner wall of the chip T4. (See, e.g., Tajima '631, Figs. 7 and 13). The internal diameter of the chip T4 at the axial location at which the magnetic body M contacts the chip T4 is required to have a dimension appropriate for the magnetic field of the magnetic body M to be effective. (See, e.g., *id.* at col. 6, lines 60-67). Of course, the internal diameter of the chip T4 in part defines the radial thickness of the chip T4 and thus the distance between the magnetic body M and the magnetic particles G. If the radial thickness is too large, the magnetic body M may not be effective. Given this constraint of the radial thickness of the chip T4, Tajima '631 seeks to limit the radial thickness of the chip T4 and thus ensure the effectiveness of the magnetic body M. Tajima '631 does so by requiring that the internal diameter of the chip T4, and thus the dimension between the magnetic body M and the inner magnetic particles G, be small enough for the magnetic field of the magnetic body M to be effective. Contrary to Tajima '631, claim 1 requires an adhesion prevention section, which would necessarily increase the dimension between the magnetic body M and the magnetic particles G because it would prevent the particles G from adhering to the inner wall of the chip T4. Thus, Tajima '631 clearly leads away from the subject matter of claim 1 and any contention otherwise can only be based on impermissible hindsight, which must be avoided as required by MPEP §2142. Therefore, the rejection of

claims 1, 4, 5, 8, 9, 13, 14 and 16-20 under 35 U.S.C. §103(a) over Tajima '631 is improper and should be withdrawn.

In view of the foregoing, it is clear that the subject matter of claims 1, 4, 5, 8, 9, 13, 14 and 16-20 is distinct from Tajima '631 in that the carriers are non magnetic, that the carriers are enclosed by forming the size or shape of the carriers so as not to pass through the inlet/outlet, and that the carriers are not adhered to the inner wall. Therefore, the subject matter of the present claims has a remarkable advantage in that the liquid can smoothly flow without covering the passage and can efficiently come into contact with the carriers according to the amount of liquid, and can promptly carry out processing for separation, etc. Moreover, the subject matter of the present claims makes unnecessary attraction control by a magnetic field for accommodating and holding the carriers in the housing section, and drawing control.

The Examiner cites portions of U.S. Patent No. 6,530,288 to August et al. ("August '288") as disclosing "[p]roviding a carrier holding section to keep the carrier from adhering to the bottom and obstruct the flow was routine in the prior art." Contrary to the subject matter of the present claims, however, the cited portions of August '288 do not disclose that the carrier is held in the housing section by self-weight of the carrier, while a fluid is drawn and discharged in two directions. Therefore, the carrier is not necessarily held without being adhered to the inner wall, even if the carrier is kept from adhering to the bottom.

For all the foregoing reasons, it is respectfully requested that the rejection of claims 1, 4, 5, 8, 9, 13, 14 and 16-20 under 35 U.S.C. §103(a) over Tajima '631 be withdrawn.

2. Claims 1, 4, 5, 8-14 and 16-20

Claims 1, 4, 5, 8-14 and 16-20 stand rejected under 35 U.S.C. §103(a) over Tajima '631 in view of U.S. Patent No. 5,919,706 to Tajima ("Tajima '706") and U.S. Patent No. 6,100,079 to Tajima ("Tajima '079"). As noted above, claim 12 has been canceled without prejudice or disclaimer. Insofar as it may be applied against the present claims, this rejection is respectfully traversed.

Tajima '706 discloses a liquid processing method but fails to disclose the three elements listed above which are missing from Tajima '631. Tajima '079 discloses a method for treating biopolymers but fails to disclose the three elements listed above which are missing from Tajima '631. Claims 10 and 11 depend from and include the subject matter of claim 1. Since neither Tajima '706 nor Tajima '079 cures the deficiencies of Tajima '631, it is clear that the combination of Tajima '631, Tajima '706 and Tajima '079 does not disclose the subject matter of claim 1 and of claims 10 and 11 which depend therefrom. In

addition, it would not be obvious to modify the disclosures of Tajima '631, Tajima '706 and Tajima '079 to include the subject matter of any of claims 1, 4, 5, 8-11, 13, 14 and 16-20 because there is no reason to so modify the disclosures.

Accordingly, it is requested that the rejection of claims 1, 4, 5, 8-11, 13, 14 and 16-20 under 35 U.S.C. §103(a) over Tajima '631 in view of both Tajima '706 and Tajima '079 be withdrawn.

D. Conclusion

It is believed that all matters set forth in the Final Office Action mailed April 1, 2010 have been addressed. Applicant has made a diligent effort to advance the prosecution of this application by canceling claim 12 without prejudice or disclaimer, amending claims 1 and 14, and submitting arguments in support of the patentability of claims 1, 4, 5, 8-11, 13, 14 and 16-20.

In view of all of the above, the allowance of claims 1, 4, 5, 8-11, 13, 14 and 16-20 is respectfully requested.

The Examiner is invited to call the undersigned at the below-listed telephone number if a telephone conference would expedite or aid the prosecution and examination of this application.

Respectfully submitted,



Alan N. Herda
Registration No. 50,426

Dated: 9/1/10
HAYNES AND BOONE, LLP
IP Section
2323 Victory Avenue
Suite 700
Dallas, Texas 75219
Telephone: 214/651-5924
IP Facsimile: 214/200-0853
D-1887615